CERTIFICATE OF MAILING

I hereby certify that this paper, together with all enclosures identified herein, are being deposited with the United States Postal Service as first class mail, addressed to the Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below.

October 20, 2005
Date

Dana A. Lozon
Dana A. Lozon

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Art Unit	:	1743
Examiner	:	Natalia A. Levkovich
Applicant	:	Joel C. Mitchell
Appln. No.	:	10/780,940
Filed	:	February 18, 2004
Confirmation No.	:	2291
For	:	**ANALYZER WITH VARIABLE VOLUME BALLAST CHAMBER AND METHOD OF ANALYSIS**

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION - 37 CFR §41.37)

1. Transmitted herewith is the APPEAL BRIEF in this application, with respect to the Notice of Appeal mailed on August 29, 2005.

2. **STATUS OF APPLICANTS**

This application is on behalf of:

_X_ other than a small entity.

___ a small entity.

A verified statement:

___ is attached.

___ was already filed.

3. **FEE FOR FILING APPEAL BRIEF**

Pursuant to 35 U.S.C. §41(a)(6), the fee for filing the Appeal Brief is:

___ small entity	$250.00
_X_ other than a small entity	$500.00
Appeal Brief fee due:	$500.00

4. **EXTENSION OF TERM**

The proceedings herein are for a patent application and the provisions of 35 U.S.C. §41(a)(8) apply. Applicant does not believe any extension of time is necessary in this instance.

Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

5. TOTAL FEE DUE

The total fee due is:

Appeal Brief fee:	$500.00
Extension fee (if any)	$ 0.00
TOTAL FEE DUE:	$500.00

6. FEE PAYMENT

X Attached is a check in the sum of $500.00.

___ Charge Account No. 16 2463 the sum of $_____.

A duplicate of this transmittal is attached.

7. FEE DEFICIENCY

X If any additional extension and/or fee is required, this is a request therefor and to charge Account No. 16 2463.

Respectfully submitted,

JOEL C. MITCHELL

By: Price, Heneveld, Cooper, DeWitt & Litton, LLP

October 20, 2005
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Atty. Docket No. LEC01 P427

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
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APPEAL BRIEF (37 CFR §41.37)

This brief is in furtherance of the Notice of Appeal mailed on August 29, 2005.

The fees required under 35 U.S.C. 41(a)(6), and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains these items under the following headings, and in the order set forth below (37 CFR §41.37(c)):

I. Real Party in Interest
II. Related Appeals and Interferences
III. Status of Claims
IV. Status of Amendments
V. Summary of Claimed Subject Matter
VI. Grounds of Rejection to Be Reviewed on Appeal
VII. Argument
VIII. Claims Appendix
IX. Evidence Appendix

The final page of this brief bears the attorney's signature.

I. Real Party in Interest

The real party in interest in this application is Leco Corporation, the assignment to which was recorded at Reel 015005, Frame 0788.

II. Related Appeals and Interferences

Appellant is aware of no other appeals or interferences related to this application.

III. Status of Claims

This is an appeal from the final rejection of claims 1-9 and 26-35. Claims 10-25 are withdrawn from consideration.

IV. Status of Amendments

Claims 1-35 were originally submitted for examination. Claims 10-25 were withdrawn. No amendments have been made to originally filed claims 1-9 and 26-35. No claims are allowed and the current status of the claims are attached hereto as the Claims Appendix (VIII).

V. Summary of Claimed Subject Matter

The analyzer of this invention includes a combustion furnace (reference number 30, Fig. 1, ¶ 13) and a coupling for a gas flow stream of the byproducts of combustion (conduits 41, 51, ¶¶ 15, 17). It also includes a combustion detector (50, ¶¶ 16, 17) in the stream of byproducts of combustion from the combustion furnace for determining when the combustion of a sample has been completed. A variable volume ballast chamber (100, ¶ 18) is coupled in the flow path of combustion gasses and comprises a chamber having a movable piston (120, ¶ 18). The piston moves in response to the introduced combustion byproducts to a variable position within the chamber depending upon when the completion of combustion is detected.

When completion of combustion is detected, the inlet of the ballast chamber is sealed (valve 102, ¶ 26), and a sensor (encoder 130, ¶ 26) detects the position of the piston. This allows the control circuit to calculate a volume correction factor (VCF, ¶ 19) used to determine the concentration of a gas being analyzed. Subsequent to the sealing of the variable volume chamber 100, the gasses are allowed to equilibrate and a gas outlet (valve 106, ¶ 26) is

opened. The piston (120) is then moved, under the force of air pressure on the opposite side of the piston through inlet 135 and pressure source (142, ¶ 26), to force an aliquot sample through detectors (150, 152, ¶ 27) for elements being detected.

The use of such a controlled variable volume ballast allows a faster analysis to be obtained since a smaller volume of byproducts of combustion are collected. Also, the system employs less costly oxygen for the combustion of the sample and transportation of the byproducts of combustion into the variable volume ballast chamber. As a result also, the byproducts of combustion collected are more concentrated, allowing a more accurate analysis.

VI. Grounds of Rejection to Be Reviewed on Appeal

A. Whether claims 1-3 and 26-30 are unpatentable under 35 U.S.C. § 102 on the basis of U.S. Patent No. 4,622,009 (Bredeweg).

B. Whether claims 1-3 and 26-30 are unpatentable under 35 U.S.C. § 103 based upon a combination of U.S. Patent No. 3,698,869 (Condon) in view of U.S. Patent No. 5,563,339 (Compton et al.).

C. Whether claims 4-9 are unpatentable under 35 U.S.C. § 103 based upon a combination of Condon and Compton et al. as well as U.S. Patent No. 4,627,267 (Cohrs et al.).

D. Whether claims 30-35 are unpatentable under 35 U.S.C. § 103 based upon the combination of Bredeweg and Compton et al. as well as U.S. Patent No. 4,527,436 (Jones).

E. Whether claims 30-35 are unpatentable under 35 U.S.C. § 103 based upon the combination of Condon , Compton et al., and Jones.

VII. Argument

A. Claims 1-5 and 26-29

In the Office Action, claims 1-5 and 26-29 were rejected under 35 U.S.C. § 102(b) on the basis of Bredeweg (4,622,009). Claims 1 and 26 are independent claims, with claims 2-5 and 27-29 dependent thereon, respectively.

Initially, it should be noted that for a prior art reference to anticipate under 35 U.S.C. § 102 every element of the claimed invention must be identically shown in a single reference, see *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990) (Emphasis added.) Those elements must be

arranged as in the claim (emphasis added). *Brown v. 3M*, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001). Bredeweg does not disclose every element claimed in the subject invention as discussed below:

1. Bredeweg fails to disclose a variable volume ballast chamber (claims 1-5 and claims 26-29) and instead employs a fixed volume collection vessel. (See column 7, lines 19-24, which describe the Bredeweg piston as moving to its uppermost position during an analysis.)

2. Further, Bredeweg does not disclose a combustion detector (such as detector 50) in the flow path of byproducts of combustion (claims 1-5) or a combustion detector coupled to the furnace for receiving byproducts of combustion (claims 26-29) for detecting the completion of combustion. Detectors 16 and 18 of Bredeweg function differently than detector 50 of this application and, in fact, are bypassed during the initiation of combustion (Bredeweg, column 7, lines 14-19), although once in line they provide an indication of completion of combustion (column 7, lines 30-34 of Bredeweg) but only to initiate an analysis. Detector 50 of this application, however, serves to control the admission of a variable volume of byproducts of combustion into the variable volume ballast 100.

3. Bredeweg has no disclosure of or need for a sensor for detecting the position of the piston (claims 1-5) since its collection vessel is completely filled during each analysis.

4. Finally, Bredeweg's control circuit does not calculate a volume correction factor (claims 1-5) since it employs a fixed volume collection vessel.

Thus, four major elements of the invention as defined by claims 1-5 are totally absent from Bredeweg. With respect to independent claim 26 and claims 27-29 dependent thereon, Bredeweg fails to disclose two of these four elements 1) a variable volume ballast chamber and 2) a combustion detector coupled to the furnace for receiving the byproducts of combustion.

In addition, Bredeweg has no need for and does not disclose a rotary encoder (130, Fig. 2) coupled to a piston by a cable in a variable volume chamber (claims 4 and 5).

The Declaration of Larry O'Brien, Vice President of Research and Development of Leco Corporation, the Assignee of this application and the Bredeweg `009 patent, is of record and is attached as the Evidence Appendix IX. Mr. O'Brien is familiar with the structure covered by the Bredeweg patent and attests in his Declaration that the fixed volume of the Bredeweg disclosure is achieved by a piston stop which limits the travel, and, therefore, the volume filled by the chamber is the same during each analysis. As a result, the same volume of oxygen is required for every analysis and, for some samples, more oxygen is used than is required to combust the sample. The excess oxygen dilutes the analytes, which can make the results less accurate, and adds additional time and expense to an analysis. Since the volume is the same for all measurements, the oxygen amount drops out of the calculation of the sample concentration. In Bredeweg, therefore, there is no need to measure the position of the piston since it always moves to the stop.

In the final rejection, the Examiner only notes that Bredeweg "appears to meet the limitation of a movable piston and a position detector." Of course, Bredeweg has a movable piston to allow the collection of the combustion gas stream without unnecessarily raising the combustion gas pressure. It also allows the purging of the collection vessel upon completion of an analysis. The Examiner's comment ignores that Bredeweg is always filled during an analysis and, therefore, is not a variable volume ballast chamber. The complete filling of the Bredeweg collection vessel is assured by the control of valves 118 until the pressure in the vessel reaches 975 mm (Bredeweg, column 7, lines 34-37). Bredeweg does not have a piston position sensor (such as encoder 130). The control circuit of Bredeweg does not calculate a volume correction factor (claims 1-5) since there is no need to do so with its fixed volume collection vessel. Bredeweg also does not have a completion of combustion detector in the flow path of byproducts of combustion (claims 1-5) or coupled to the furnace for receiving byproducts of combustion (claims 26-29), which functions to control a variable volume ballast. The detector of the present invention is employed to stop the filling of the ballast chamber upon completion of combustion so that a volume correction factor can be calculated based upon the sensed piston position.

Applicant's invention provides a much faster and more efficient analysis by only using that amount of volume of a variable volume ballast chamber necessary for complete

combustion of the specimen. This also results, as noted in the summary of the invention, in a higher concentration of byproducts of combustion, which allows for more accurate results, which can be obtained more quickly. As noted in the O'Brien Declaration (¶ 5), the Bredeweg patent not only does not inherently disclose a piston distance measurement device, it, in fact, teaches away from any need for such a device.

As a result of the four elements of the invention defined by claims 1-5, which are missing in the teaching of the Bredeweg `009 patent, and two elements of claims 26-29, as well as the necessary elements in the dependent claims as noted above, it is submitted that the 35 U.S.C. § 102(b) rejection of claim 1 and claims 2-5 dependent thereon and claim 26 and claims 27-29 dependent thereon based upon Bredeweg should be reversed.

B. Claims 1-3 and 26-30

Claims 1-3 and 26-30 were rejected under 35 U.S.C. § 103 on the combination of Condon (3,698,869) in view of Compton et al. (5,563,339).

The requirements for making a *prima facie* case of obviousness are described in MPEP § 2143 as follows:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claims limitations.
>
> The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488,20 USPQ2d 1438 (Fed. Cir. 1991).

MPEP § 2143.01 provides further guidance as to what is necessary in showing that there was motivation known in the prior art to modify a reference teaching. Specifically, MPEP § 2143.01, under the heading "Fact That References Can be Combined or Modified is not Sufficient to Establish *Prima Facie* Obviousness", states:

> The mere fact that references <u>can</u> be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

and under the heading "Fact That the Claimed Invention is Within the Capabilities of One of Ordinary Skill in the Art is not Sufficient by Itself to Establish *Prima Facie* Obviousness", states:

> A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made,' because the references relied upon teach all aspects of the claimed invention were individually known in the prior art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

The Condon patent, like Bredeweg, provides a fixed volume reservoir 52 (Fig. 1). Subsequently, the combustion gas is passed to an aliquot sampler (the delay volume 64). As seen in Figs. 3A and 3B, this is done to achieve a steady state water concentration with minimum change in water condensation through use of the delay volume 64. Thus, the delay volume of Condon serves the same function as the aliquot sampler of Applicant's analyzer (see ¶ 27 of this application) and is a distinctly different part of and operates differently than the variable volume ballast chamber defined in claims 1-3 and 26-30. Although the Condon patent suggests that the delay volume 64 could be changed by using a piston-controlled changeable volume cylinder, it does not do so for the purposes of collecting the initial combustion gas after completion of combustion has been detected, as specifically defined in Applicant's claims 1-3 and 26-30. Condon also fails to include a detector for determining when combustion is completed and, in fact, only teaches closed combustion where the sample is combusted in a closed static volume of oxygen.

Applicant's system defines a combustion completion detector in the flow path of the combustion stream which allows a flow path of combustion byproducts to be received by the variable volume ballast chamber only until combustion has been completed. Thus, Applicant's system defines a dynamic flow of oxygen over the sample during combustion and a real time decision is made as to when combustion is completed, allowing the oxygen stream to be turned off, thereby providing for quicker analysis utilizing less oxygen.

The Compton et al. patent relates to the vapor pressure testing of hydrocarbon fuels. For doing so, it uses a container (95) with a screw jack (12) driven piston (10) for determining the vapor pressure of a liquid sample. The screw jack is driven by a stepper motor 16. Such a

piston would not operate in the environment of Applicant's invention, which relies upon gas pressure to move its piston. The screw jack 12 would prevent combustion gases from moving the piston at all. The system of the present invention is not involved in the temperature-controlled measurement of vapor pressure of samples and instead combusts samples at nearly 1000°C (¶ 14) and subsequently determines the sample elemental compositions by utilizing a variable volume ballast chamber to provide samples higher in concentration to increase sensitivity and economy by the reduced oxygen necessary for the analysis. There is no suggestion in either Condon or Compton et al. for their combination, and there would be no logical reason to combine the teachings of Condon and Compton et al. The Examiner's attempted hindsight reconstruction of Applicant's invention is impermissible. See *Interconnect Planning Corp. v. Feil*, 227 USPQ 543, 551 (Fed. Cir. 1985) where the court noted:

> When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.

It is virtually impossible to conceive how the Compton et al. patent, whose movable piston would not work in Applicant's analyzer and which doesn't relate to a combustion analyzer, could be considered to supplement the absence in the teaching of Condon of Applicant's variable volume ballast chamber, combustion completion detector piston position sensor and control to provide a volume correction factor to render claims 1-3 or 26-30 obvious under 35 U.S.C. § 103. Accordingly, it is respectfully requested that this rejection be reversed.

C. Claims 4-9

Claims 4-9 were also rejected under 35 U.S.C. § 103 on the combination of Condon and Compton et al. as noted above and further in view of Cohrs et al. (4,627,267). Cohrs teaches a flow meter calibration system used to measure flow rate. The Cohrs et al. disclosure does not relate to Applicant's field of invention, namely, elemental analyzers. Applicant, in claims 4-9, is not claiming a rotary encoder for a piston position sensor but rather an analyzer having a variable volume ballast chamber, a combustion detector in the flow path of combustion products with a movable piston in combination with a rotary encoder for determining how much of the volume of the chamber is filled during a given analysis, and a control for providing a volume correction

factor. There is no hint or remote suggestion of such an invention as the Examiner's hypothecated combination of Condon, Compton et al., and Cohrs et al.

The system of Applicant's invention is not dependent on flow rate at all. During combustion in Applicant's system, the flow rate can vary dramatically and the system is not dependent on flow rate. The system defined by claims 4-9, thus, pertains to a combustion system with a combustion monitor that determines when combustion is complete and fills a variable volume ballast chamber until completion of combustion, after which the flow, which can vary greatly, is discontinued. In examining the details of dependent claims 4-9 relating to the subsequent handling of the sample in the variable ballast chamber, it should not be confused with the overall invention as defined by claim 1 on which these claims depend and which, as noted above with respect to the rejection on the combination of Condon and Compton et al., is not taught or suggested by the hypothetical combination proposed by the Examiner. Accordingly, the rejection of claims 4-9 on the combination of Condon, Compton et al., and Cohrs et al. should be reversed.

D. Claims 30-35

Claims 30-35 were rejected under 35 U.S.C. § 103 on the combination of Bredeweg, Compton et al., and Jones. Claim 30 depends from claim 26 and includes the structure of claim 26 as discussed above. In addition, claim 30 defines a sensor for detecting the position of the piston and a CPU for calculating a volume correction factor for the concentration of gases of byproducts of combustion based upon the detected position of the piston. The addition of the Compton et al. reference for detecting vapor pressure of a liquid sample and its screw jack piston provides no suggestion of its combination with Bredeweg. As noted above, Bredeweg does not need to calculate a volume correction factor as defined in claim 30 since it uses a fixed volume collection vessel. The Jones reference teaches another liquid sampling device in an unrelated environment. A liquid is non-compressible and a volume correction factor is irrelevant. Claim 30 specifically discuses the calculation of a volume correction factor, such as disclosed in ¶¶ 19-25 of the specification, which is inapplicable for non-compressible liquids, such as being measured by Jones. The combination defined by claims 30-35 could not be suggested by an unlikely combination of the non-analogous screw jack structure of Compton et al. for a vapor

pressure analyzer or the liquid sampler of Jones with Bredeweg. It is requested that the Board reverse the Examiner's rejection of claims 30-35.

E. Claims 30-35

Finally, in a last hypothetical permutation of references newly added in the final rejection, the Examiner rejects claims 30-35 under 35 U.S.C. § 103 on the basis of Condon, Compton et al., and the further patent to Jones. The addition of Jones, which, as noted above, is a liquid sampling device, adds nothing to the failure of Condon to provide a variable volume ballast chamber for receiving byproducts of combustion once completion of the combustion is detected and detecting the position of a piston for the purpose of calculating a volume correction factor as defined in claims 30-35. The Compton et al. patent for detecting vapor pressure with its screw jack driven piston also adds no suggestion of Applicant's invention as defined by claims 30-35. None of the disparate teachings of Condon, Compton et al., or Jones suggests their combination with one another let alone to render Applicant's invention as defined by claims 30-35 obvious. Accordingly, this rejection of claims 30-35 under 35 U.S.C. § 103 should be reversed.

It is hoped that by a clear understanding of the elements defined in claims 1-9 and 26-35 of Applicant's invention as originally claimed and the explanation of the teachings of the prior art relative to these claim limitations, the Board will reach the conclusion that Applicant's invention is neither anticipated by nor rendered obvious by any hypothetical hindsight combination of the prior art of record. It is requested, therefore, that the Examiner's rejection of claims 1-9 and 26-35 be reversed.

VIII. Claims Appendix

The claims pending in the subject application are as follows:

1. An analyzer comprising:

a combustion furnace for receiving samples for combustion;

a combustion detector coupled in a flow path of byproducts of combustion from said combustion furnace for determining when combustion is completed;

a variable volume ballast chamber coupled to the flow path of combustion byproducts for receiving byproducts of combustion until combustion has been completed, said variable volume ballast chamber including a movable piston and a sensor for detecting the position of said piston; and

a control coupled to said sensor for the detection of the position of the piston and calculating a volume correction factor for the concentration of gases of the byproducts of combustion based upon the position of said piston.

2. The analyzer as defined in claim 1 wherein said combustion detector detects CO_2.

3. The analyzer as defined in claim 1 wherein said combustion detector detects H_2O.

4. The analyzer as defined in claim 1 wherein said variable volume ballast chamber comprises a cylindrical container and said sensor is a rotary encoder coupled to said piston by a cable.

5. The analyzer as defined in claim 4 wherein said cylindrical container has a sample gas inlet and a sample gas outlet at one end and a first control valve associated with said inlet and a second control valve associated with said outlet to control the entry and exit of sample gas into said variable volume ballast chamber.

6. The analyzer as defined in claim 5 wherein said cylindrical container includes a fluid inlet at an end opposite said one end and on a side of said piston opposite said sample gas inlet and a fluid control valve coupled to a source of pressurized fluid to selectively move said piston to force sample gas from said variable volume ballast chamber through said sample gas outlet.

7. The analyzer as defined in claim 6 wherein each of said first, second and fluid control valves are coupled to said control for sequentially actuating said valves to introduce sample gas into said variable volume ballast chamber, allow said sample gas to equilibrate in said variable volume ballast chamber, and subsequently discharge sample gas from said variable volume ballast chamber.

8. The analyzer as defined in claim 7 wherein a H_2O sensor is coupled to said gas outlet of said variable volume ballast chamber to detect the concentration of H_2 during an analysis.

9. The analyzer as defined in claim 7 wherein a CO_2 sensor is coupled to said gas outlet of said variable volume ballast chamber to detect the concentration of C during an analysis.

26. An elemental analyzer for the determination of the concentration of at least carbon and nitrogen comprising:

a combustion furnace for receiving organic samples for combustion;

a combustion detector coupled to said furnace for receiving byproducts of combustion from said combustion furnace for determining when combustion is completed;

a variable volume ballast chamber coupled to said combustion furnace for receiving byproducts of combustion, said variable volume ballast chamber including a movable piston; and

a control coupled to said combustion detector for the detection of the completion of combustion and sealing byproducts of combustion in said variable volume ballast chamber when combustion is completed.

27. The analyzer as defined in claim 26 wherein said variable volume ballast chamber includes a sample gas inlet and a sample gas outlet on one side of said piston and said control includes valves coupled to said inlet and to said outlet for selectively capturing byproducts of combustion in said variable volume ballast chamber.

28. The analyzer as defined in claim 26 wherein said combustion detector detects CO_2.

29. The analyzer as defined in claim 26 wherein said combustion detector detects H_2O.

30. The analyzer as defined in claim 26 and further including a sensor for detecting the position of said piston and wherein said control includes a CPU for calculating a volume correction factor for the concentration of gases of the byproducts of combustion based upon the position of said piston.

31. The analyzer as defined in claim 30 wherein said variable volume ballast chamber comprises a cylindrical container having a sample gas inlet and a sample gas outlet on one side of said piston and an inlet valve coupled to said inlet and an outlet valve coupled to said outlet.

32. The analyzer as defined in claim 31 wherein said cylindrical container includes a fluid inlet on an opposite side of said piston and a fluid control valve coupled to a source of pressurized fluid to selectively move said piston to force sample gas from said variable volume ballast chamber through said sample gas outlet.

33. The analyzer as defined in claim 32 wherein each of said valves are coupled to said CPU for sequentially actuating said valves to introduce sample gas into said variable volume

ballast chamber, allow said sample gas to equilibrate in said variable volume ballast chamber, and subsequently discharge sample gas from said variable volume ballast chamber.

34. The analyzer as defined in claim 33 wherein a H_2O sensor is coupled to said gas outlet of said variable volume ballast chamber to detect the concentration of H_2 during an analysis.

35. The analyzer as defined in claim 33 wherein a CO_2 sensor is coupled to said gas outlet of said variable volume ballast chamber to detect the concentration of C during an analysis.

IX. Evidence Appendix

PATENT
LEC01 P427

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Examiner	: Natalia A. Levkovich
Applicant	: Joel C. Mitchell
Serial No.	: 10/780,940
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For	: **ANALYZER WITH VARIABLE VOLUME BALLAST CHAMBER AND METHOD OF ANALYSIS**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

DECLARATION UNDER 37 C.F.R. § 1.132 OF LARRY O'BRIEN

I, Larry O'Brien, hereby declare:

1. I am the Vice President of Research and Development for Leco Corporation of St. Joseph, Michigan, the Assignee of the above-identified application.

2. I am familiar with the Bredeweg patent 4,622,009, which discloses an analyzer Model No. CHN-1000 made by Leco Corporation, the Assignee of the present application.

3. The Leco analyzer, Model No. CHN-1000, uses a fixed volume ballast chamber.

4. In the Leco analyzer, Model No. CHN-1000, the fixed distance referred to by the Examiner in column 7, lines 57-60, is accomplished by a fixed stop in the ballast chamber for the piston.

5. The Bredeweg '009 patent does not suggest the use of a piston sensor or encoding device since the structure disclosed by the '009 patent uses a fixed piston stop, as seen in Fig. 4, to control the fixed distance through which the piston always moves.

6. The ballast in the '009 patent is filled to the same volume for every analysis.

All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further, these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Sections 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent issued thereon.

2-2-05
Date

Larry O'Brien

It is requested that the Examiner's rejection of claims 1-9 and 26-35 be reversed.

Respectfully submitted,

JOEL C. MITCHELL

By: Price, Heneveld, Cooper, DeWitt & Litton, LLP

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